Stovepipe Warfare:
An Architectural Approach to Achieving Interoperable MAGTF C4ISR Systems

Presented by:
Mr. Robert Hobart
Deputy Commander, C4I Integration
Marine Corps Systems Command
(703) 784-0700
hobartrl@mcsc.usmc.mil

Outline

- Background
- Desired Effects
- Architectural Approach

Background: The Approach's Philosophy…

- …was strongly influenced by the Marine Corps warfighting philosophy based on **Maneuver**
- …incorporates themes from Maneuver Warfare
  - Commander's Intent
  - Common Tactical Picture
  - Observe, Orient, Decide, Act (the OODA Loop)
  - Keep it Simple

Background: One Architecture, Three Views

	Technical Architecture (TA)	Systems Architecture (SA)	Operational Architecture (OA)
Controlling Authority	HQMC C4 (JTA)	**MARCORSYSCOM (MAGTF C4ISR)**	MCCDC
Domain	Standards, Protocols, Interfaces	Systems & their relationships (components & subcomponents)	Organizations, Functions, & Information exchange (system-less)
MARCORSYSCOM Role	**Use the JTA to build the MAGTF C4ISR SA**	**Create & maintain the MAGTF C4ISR SA**	**Use OA to assess where system "fits" into SA**
"MAGTF City" analogy	Plumbing and Electrical codes of house	City Map with Neighborhood & Street Location	City Zoning: location supports activity

Desired Effects

- A Family of MAGTF C4ISR Systems whose…

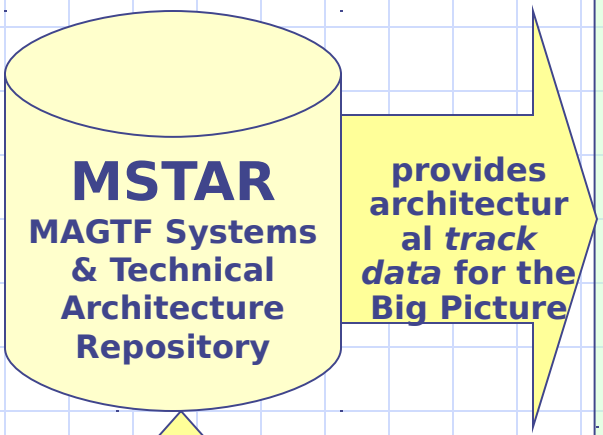
OODA

  - Technical and Systems Architecture is accurate, clear, and controlled
  - Level of Interoperability and Architectural Compliance is assessed to determine both deficiencies and opportunities for improvement
  - Interoperability deficiencies and opportunities are prioritized for near, mid, or far-term resolution
  - Interoperability correction and improvement activities are planned, implemented, and achieved

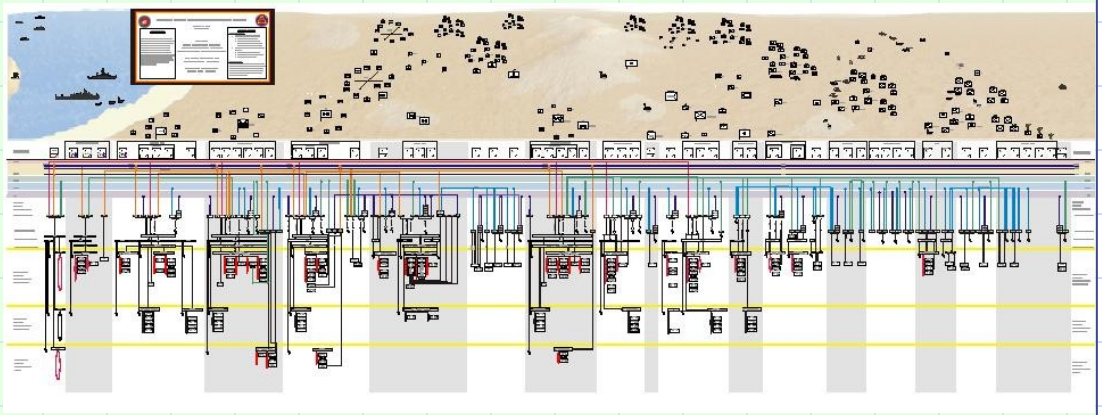
The intended end states are framed as outcomes of an "Architectural Command and Control" approach based on the OODA Loop developed by the late Col Boyd, USAF

Architectural Approach

- **Observe** the same architectural *battlespace*

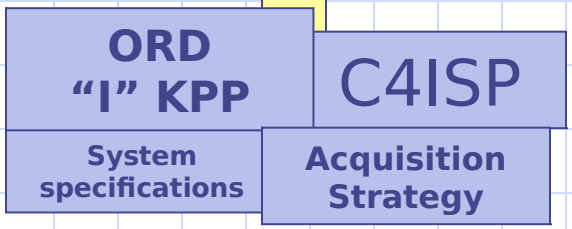


MAGTF C4ISR Integrated Architecture Picture
(The "Big Picture")



Provides a ***common tactical picture*** of the MAGTF C4ISR Architecture ***battlespace***

Architecture Data Sources

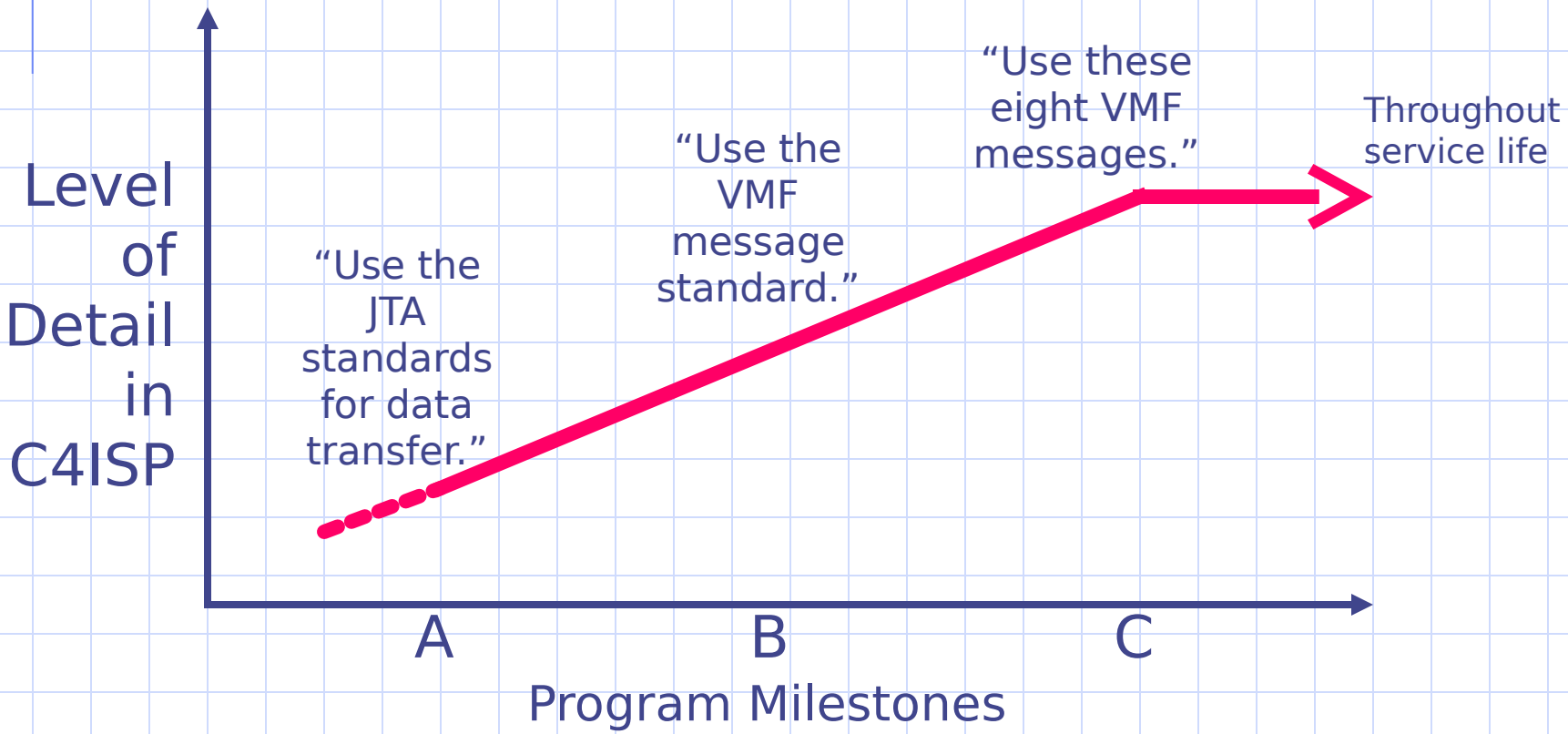


Observing Various Environments

- Naval Platform Integration Issues
  - USMC/USN use the D-30 process to integrate Marine Corps systems onto Amphibious Platforms and to resolve issues on Amphibious platforms
  - Efforts are underway between SPAWAR and MARCORSYSCOM C4I, to depict a common Amphibious C4I Systems Architecture that is accurate, clear, and controlled
- Supporting Establishment
  - HQMC depictions of the Enterprise Information Technology Architecture (EITA)
- POM 04
  - Provide a canvas that supports the advocates' understanding of the interdependencies of an initiative relative to the existing Systems and Technical Architectures

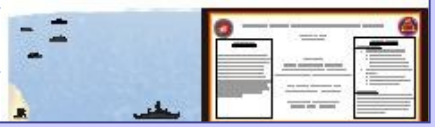
The C4I Support Plan (C4ISP)

- Guided by SE&I's *C4ISP Handbook*, the C4ISP becomes a key source for horizontal CM information needed to perform MAGTF C4ISR Systems and Technical Architecture interoperability assessments



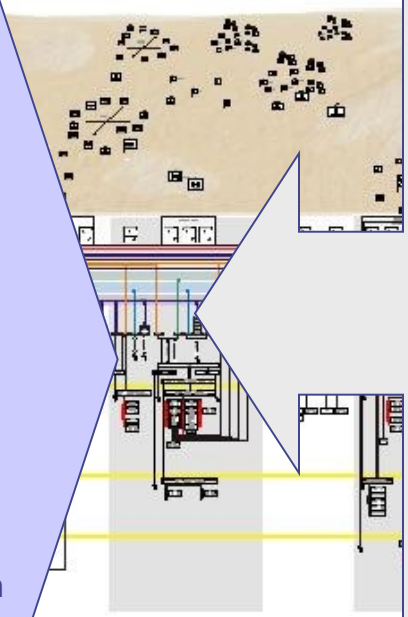
Architectural Approach (cont)

- **Orient** through assessment of architectural *threats* (any source of actual or potential architectural change)



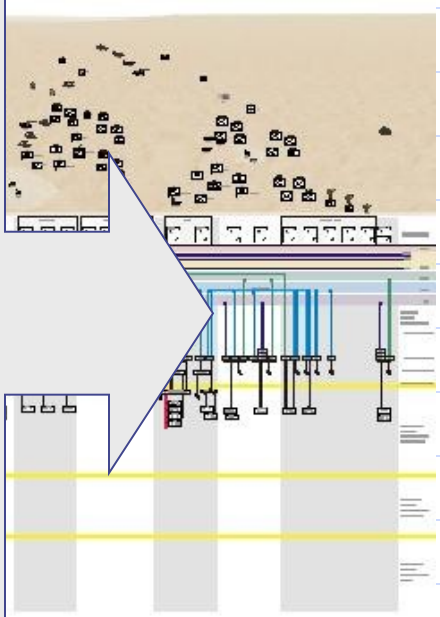
External sources
of architectural change

- Policy changes in the JTA
- Joint C4ISR Capstone Requirements Documents (GIG, IDM)
- Joint Systems (FIOP)
- Navy Blue-in-support-of-Green systems
- Changes anticipated from S&T



Internal sources
of architectural change

- Service Life SLEP / Replacement of outdated system
- Deficiencies; of both the network and individual systems
- Mission change; new demands to existing systems
- Warfighting Concept change; new demands to existing family of systems

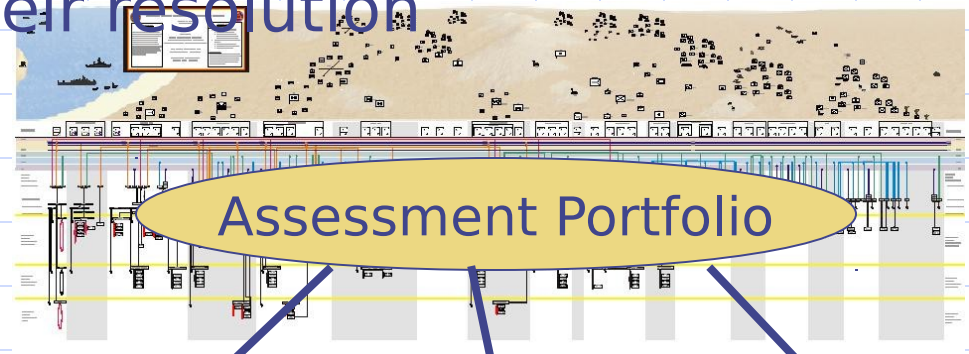


The Assessment Portfolio

- Compliance assessments
  - CRDs (GIG, IDM, TAMD, CID)
  - Joint Initiatives (FIOP)
- Benchmark assessments
  - Performed at MCTSSA's Systems Integration Environment
  - Critical Information strings (Call for Fire) & broadcasts (PLI, alerts)
- Functional assessments
  - Topics have included JTRS, Deployable NMCI, Teleport ATM, XML, & Range extension from ship to landed maneuver forces
- Level of Information System Interoperability (LISI) assessments
  - System's ability to "share" its data; the degree of "stovepipe-ness"
- Special assessments
  - Science & Technology assessments
  - Warfighting Concept assessments

Architectural Approach (cont)

- **Decide** the priority of assessment deficiencies/ opportunities and the timeframe for their resolution



The MAGTF C4ISR Integrated "Target List"

Near Term Targets (effects occur faster than next POM)

Mid Term Targets (effects occur during next POM)

Far Term Targets (effects occur beyond next POM)

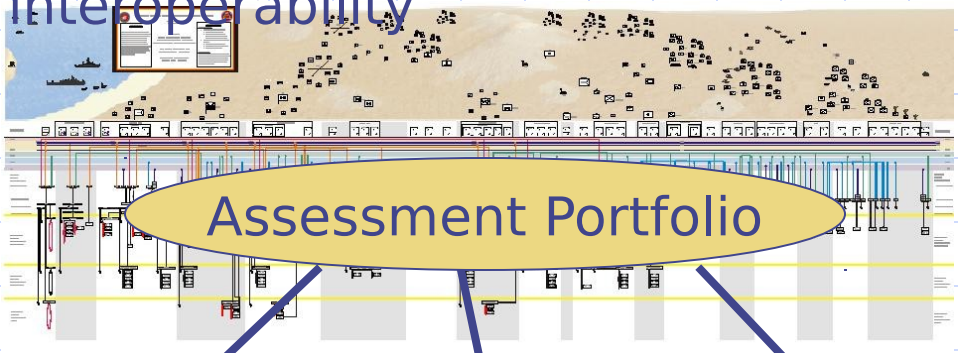
now — 5 to 6 yrs — 8 to 10 yrs

Example Targets

- Near Term:
  - An assessed interoperability problem involving fielded systems that can be resolved prior to the POM
- Mid Term:
  - An assessed interoperability problem involving systems under development that can be resolved by modification of ORD Interoperability KPPs
- Far Term:
  - An assessed interoperability problem involving future MAGTF C4ISR systems that can be resolved by influencing S&T efforts such as the Future Naval Capabilities program at ONR

Architectural Approach (cont)

- **Act** to resolve targets on the **MAGTF C4ISR Integrated "Target List"** to ensure near, mid, and far term interoperability



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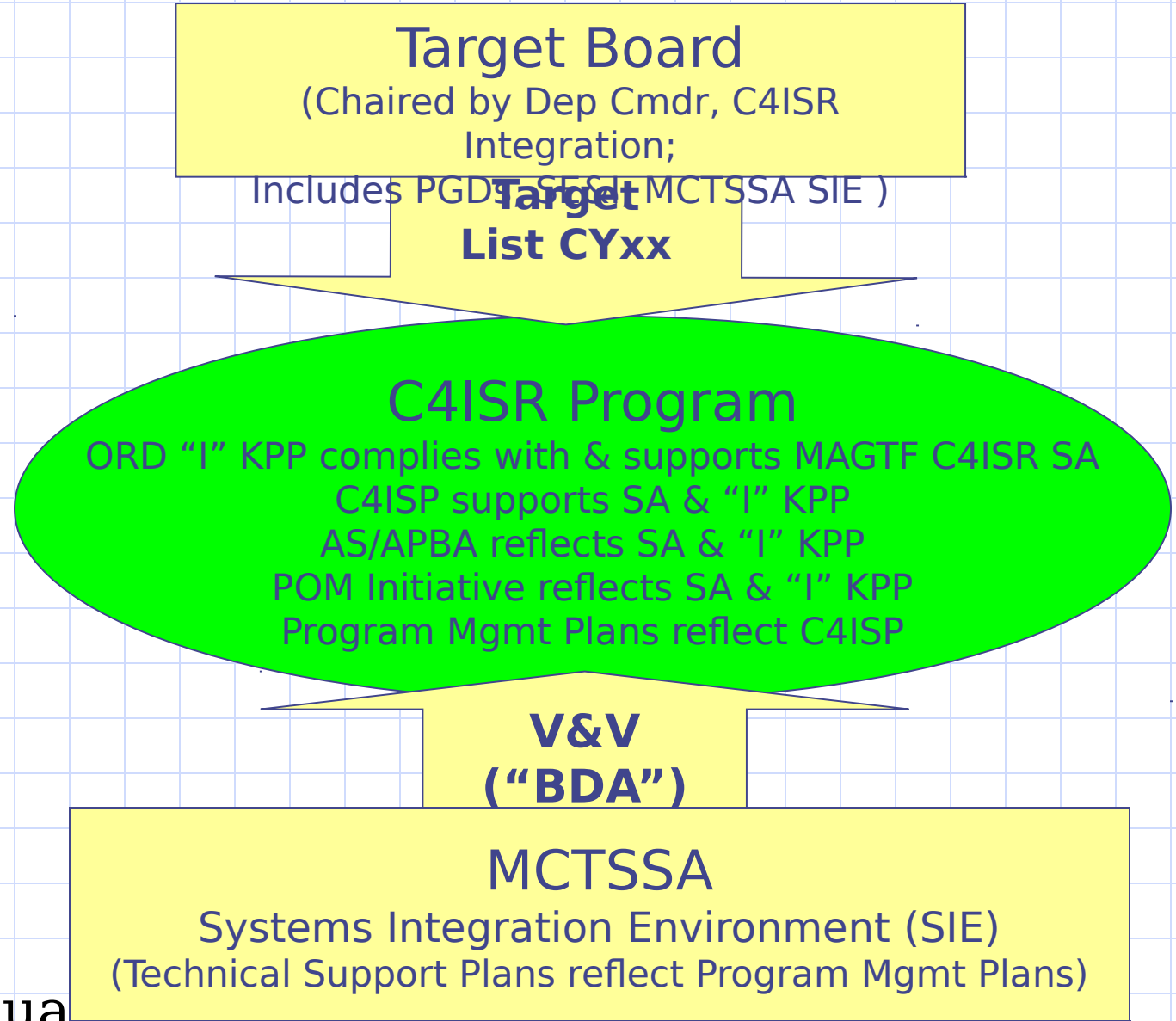
Targeting Process


Target Board
(Chaired by Dep Cmdr, C4ISR Integration;
Includes PGDs, SES, & MCTSSA SIE)
Target List CYxx
C4ISR Program
ORD "I" KPP complies with & supports MAGTF C4ISR SA
C4ISP supports SA & "I" KPP
AS/APBA reflects SA & "I" KPP
POM Initiative reflects SA & "I" KPP
Program Mgmt Plans reflect C4ISP
V&V ("BDA")
MCTSSA
Systems Integration Environment (SIE)
(Technical Support Plans reflect Program Mgmt Plans)

Revisiting the Themes from Maneuver Warfare

- Commander's Intent
  - Supporting PMs in the fielding of OPEN and INTEROPERABLE C4ISR systems
- Common Tactical Picture
  - The "Big Picture": fed by MSTAR data
- Use the OODA Loop
  - Observe same "Big Picture"
  - Orient to sources of architectural change
  - Decide what interoperability "targets" to engage and when
  - Act to engage selected interoperability "targets"
- Keep it Simple
  - The C4ISP: "one-stop" source for C4ISR program architectural information